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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/712,920	11/16/2000	Hidenori Maruyama	Q61808	2982

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EXAMINER

BARANYAI, LAWRENCE

ART UNIT	PAPER NUMBER
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2665

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DATE MAILED: 03/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/712,920

Applicant(s)

MARUYAMA, HIDENORI

Examiner

Lawrence Baranyai

Art Unit

2665

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 November 2000.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-10 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 16 November 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2.4.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. Initialed and dated copies of Applicant's IDS form 1449, Paper Nos. 2 and 4, are attached to the instant Office action.

Drawings

1. The drawings are objected to because of inconsistencies with the specification. In particular, fig. 3 step 5 is presently labeled "Long Code Group Detecting Section" and should apparently be labeled "Long Code Detecting Section" to be consistent with the description of the third stage on p. 11 line 16, since the stated purpose of stage 3 is to determine the Long Code and to distinguish itself from fig. 3 step 3. Figure 4 output of step 27 should be "To Second Stage Processing Section". Also, fig. 6 step 47 is presently labeled "Long Code Timing Detecting Section" and should apparently be labeled "Long Code Group Detecting Section" to be consistent with the description of the second stage on p. 11 line 10 since the stated function of stage 2 is to determine the Long Code Group, and to distinguish itself from fig. 4 step 27. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

1. The abstract of the disclosure is objected to because the length exceeds 25 lines of text or 150 words. Correction is required. See MPEP § 608.01(b).

2. The disclosure is objected to because of the following informalities: The description for the second stage contains an error. Page 11 line 11 presently reads "detecting section 3 for detecting a long code timing" and should apparently read "detecting section 3 for detecting a long code group" since the stated purpose of stage 2 is to determine the long code group (line 10) and to distinguish itself from stage 1 section 1. Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1-3, 5-8, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi (US 6,167,037) in view of Lee (VTC 1999).

Regarding claims 1 and 6, Higuchi teaches a method/system of fast cell searching (synchronization) for asynchronous mode mobile communications (figs. 24, 25a, 25b, 26, 27a, 28b; col. 15, line 32 – col. 22, line 61) comprising:

a first stage (fig. 25a: long code timing detector 90) including the step of detecting correlation power values between the common identification code and a received signal by using a correlator (fig. 25a: matched filter 80 is a correlator, shared short code replica generator 91, and memory for correlation values and timings (82)), and detecting a long code timing from a corresponding base station on the basis of a maximum value of the correlation power values (fig. 25a: maximum correlation value selector 83),

a second stage (fig. 25b: long code group timing detector 92) including the step of detecting a correlation value between the received signal and each long code group identification short code (fig. 26b: group code replica generator 93, integrate/dump 94, square-law detector 95, memory for correlation values 96, detector of correlation value sum 97), obtaining a sum of the correlation values corresponding to the number of long code group identification short codes in each slot according to a transmission pattern of long code group identification short codes in each predetermined long code group (detector of correlation sum corresponding to transmission patterns of group code candidates 97), the step of setting a group having a maximum correlation sum as a group to which a long code of the received signal belongs (fig. 25b: long code group detector 99), the step of detecting a slot in which a head of the pattern is obtained as a start slot of a frame (fig. 26: multi-frame pattern is determined by long detected long code timings

which corresponds to detecting a slot in which a head of pattern is obtained as a start slot of a frame, as shown.)

a third stage (fig 25b: long code group identification circuit) including the step of sequentially generating replica codes of long codes and short codes from long code candidates included in the long code group identified in the second stage (fig. 25b: long code replica generator 101 and shared short code replica generator 91), the step of determining a long code exceeding the threshold as a long code of a target cell (fig. 25b: threshold value decision 104); performing synchronization detection by using a frame sync signal (fig. 25b: output of 104 threshold value decision (YES) synchronization decision to rake combiner), completing initial synchronization if synchronization is detected (fig. 25b: output of 104 threshold value decision (YES) synchronization decision to rake combiner).

Regarding claims 2, 3, 7, and 8, Higuchi teaches the averaging of the correlations (fig. 26, col. 16 lines 46-57).

Regarding claims 5 and 10, Higuchi teaches the threshold can be varied for the long code identification circuit - stage 3 (fig. 25b: threshold value determiner 105).

Higuchi does not specifically teach the use of an arbitrary threshold decision block each step or selective feedback to repeat the step if the decision step. Lee, in the analogous field of communications, discloses an asynchronous mode fast cell search method/system that utilizes a threshold decision block and repeats the step if the threshold is not met and begins the search from step one if synchronization is not detected (p. 1562: fig. 3 – threshold detection decision blocks and feedback signals to

Art Unit: 2665

prior steps if threshold is not met. Return to step one if synchronization is not met.

Repeats prior steps is intermediate thresholds are not met).

One skilled in the art of communications would recognize the advantage of utilizing a threshold decision block at each step of the search process to facilitate fast cell search, as noted by Lee (p. 1562 col. 2, last paragraph). It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Lee, to apply the decision block features of Lee, to the cell search method/system of Higuchi, with the motivation being to arrive at a system that improves the speed of the cell search.

3. Claims 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi (US 6,167,037) and Lee (VTC 1999) as noted for claims 1-3, 5-8, and 10 above, and further in view of Higuchi (VTC 1997). Higuchi teaches a method/system of fast cell searching (synchronization) for asynchronous mode mobile communication as noted for the claims above. Lee teaches the method of including a threshold decision in each stage and repeating a previous step or beginning step if the threshold is not met as noted for the claims above.

These references do not specifically teach performing synchronization detection by using a frame sync signal, and determining completion of the initial synchronization if synchronization is detected, and returning to the first stage if synchronization is not detected.

Higuchi (VTC 1997), in the analogous field of communications, discloses a three step method of fast cell search which includes a long code identification in the third

stage, utilizes the frame synchronization signal to determine completion of the initial synchronization if synchronization is detected, and returns to the first stage if the synchronization is not detected (p. 1431, fig. 3, 3rd step for "Long Code" and associated text in col. 2 second paragraph).

One skilled in the art of communications would recognize the advantage of utilizing a frame sync signal to improve the accuracy of the cell search process to reduce false detection, as noted by Higuchi (VTC 1999 p. 1431 col. 2, second paragraph: "to reduce false detection"). It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Higuchi (VTC 1997), to apply the frame sync feature of Higuchi, to the method/system of Higuchi and Lee, with the motivation being to arrive at a system that improves cell search accuracy.

Citation of Relevant Prior Art

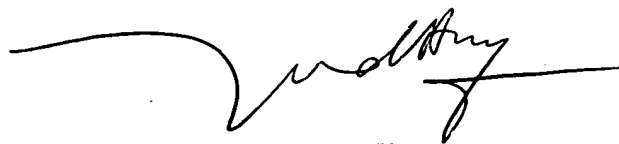
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Zhou et al. (EP 0930723 A2), Shou et al. (US 6,038,250), Shou et al. (US 5,910,948), Sawahashi et al. (US 5,940,433), Dent (US 6,625,200), Dent (US 2004/0005020), Higuchi et al. (Electronics Letters 1999), Higuchi et al. (VTC 2000), Adachi et al (Wireless Communications Conference 1997), Adachi et al. (Asia Pacific Microwave Conference 1997), Kim et al. (IEEE Communications Letters 1998), Kim et al. (Electronic Letters 1998), Olofsson et al. (VTC 1999), Nystrom et al. (IEEE ICUPC 1998), Kim et al. (IEEE ICUPC 1998)) disclose cell search/initial synchronization systems and methods for asynchronous mode mobile communications.

Examiner Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Baranyai whose telephone number is (703) 305-8707. The examiner can normally be reached on Monday-Thursday: 6:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (703) 308-6602. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

lb

A handwritten signature in black ink, appearing to read 'Huy Vu', with a long horizontal line extending to the left.

HUY D. VU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600